A road, a disappearing river and fragile connectivity in Sino-Inner Asian borderlands

Joniak-Lüthi, Agnieszka

Abstract: In 2013, President Xi Jinping formulated China's vision of Eurasian connectivity: The Silk Road Economic Belt. The strategy envisages the construction of infrastructure networks that will enmesh the Eurasian continent and form an interconnected space of exchange. Since the plan was announced, the Economic Belt has attracted much academic and media attention in terms of the infrastructure being built and its future potentialities. At the same time, questions about the sustainability of this infrastructure in a dynamic Sino–Inner Asian borderland, with its highly fluid terrain and socio-political geography, have been virtually absent from the debate. The inevitable decay, maintenance and social ambiguity surrounding transport infrastructure lack the appeal associated with new construction projects; yet, discussing them is crucial in the context of mega initiatives such as the Economic Belt. It is important to bring it back 'down to the ground' and into more mundane terms. By zooming in on a single desert road in northwest China that has been designated as a crucial conduit in the westward arc of the Economic Belt, this article draws attention to the social complexity and ecological vulnerability of transport infrastructure in the Sino–Inner Asian borderlands. At one scale, this infrastructure is part of China's vision of globalization; at another scale, however, it is firmly embedded in local contexts. By pushing the political, ecological and material complexity of road maintenance to the centre of our inquiry, the article offers a new perspective on the current construction boom and its sustainability.

DOI: https://doi.org/10.1016/j.polgeo.2019.102122

Political Geography 78 (2020) 102122

Contents lists available at ScienceDirect

Political Geography

journal homepage: http://www.elsevier.com/locate/polgeo

A road, a disappearing river and fragile connectivity in Sino-Inner Asian borderlands

Agnieszka Joniak-Lüthi [1]

Department of Social Anthropology and Cultural Studies, University of Zurich, Switzerland

A B S T R A C T

In 2013, President Xi Jinping formulated China's vision of Eurasian connectivity: The Silk Road Economic Belt. The strategy envisages the construction of infrastructure networks that will enmesh the Eurasian continent and form an interconnected space of exchange. Since the plan was announced, the Economic Belt has attracted much academic and media attention in terms of the infrastructure being built and its future potentialities. At the same time, questions about the sustainability of this infrastructure in a dynamic Sino–Inner Asian borderland, with its highly fluid terrain and socio-political geography, have been virtually absent from the debate.

The inevitable decay, maintenance and social ambiguity surrounding transport infrastructure lack the appeal associated with new construction projects; yet, discussing them is crucial in the context of mega initiatives such as the Economic Belt. It is important to bring it back 'down to the ground' and into more mundane terms. By zooming in on a single desert road in northwest China that has been designated as a crucial conduit in the westward arc of the Economic Belt, this article draws attention to the social complexity and ecological vulnerability of transport infrastructure in the Sino–Inner Asian borderlands. At one scale, this infrastructure is part of China's vision of globalization; at another scale, however, it is firmly embedded in local contexts. By pushing the political, ecological and material complexity of road maintenance to the centre of our inquiry, the article offers a new perspective on the current construction boom and its sustainability.

It seems that every wannabe grand president feels the need to launch a grand infrastructure project. Upon completing his ascent to power in 2013, China's President Xi Jinping has thus done exactly what so many other technocratic, modernist rulers have done before him: launch a spectacular infrastructure initiative. Referred to as the Belt and Road Initiative (一带一路, Yidai yilu), this is set to transform East, Inner and South Asia, the Middle East and Europe into an interconnected space of exchange.[2] The networks of infrastructure – roads, railways, seaports, pipelines – are to embrace the Eurasian continent and 'break the connectivity bottleneck' in Asia.[3] Since the plan was announced, the Belt and Road Initiative (BRI) and the connectivity it promises have attracted huge international attention. That promise of new connectivity, and the nearly magical powers ascribed to transport infrastructure to generate peace and prosperity, and to unite the states and people along the Economic Belt, are at the very core of the Chinese discourse around it (Li, 2015; NDRC 2015). In the new strategy, western China, where most of the domestic investment related to the BRI flows into new transport infrastructures, has acquired a novel form of centrality (Rippa, 2017, p. 17). Typically labelled 'backward' (落后, *luohou*) in the past, western China is now defined as the 'core area' (核心区, *hexinqu*), a 'leading edge' (前沿, *qianyan*), a 'bridgehead' (桥头堡, *qiaotoubao*) and also as a 'gateway' (关道, *guandao*) for China's economy and enterprises to 'expand out' (走出去, *zouchuqu*) into the global arena (Sidaway and Chih, 2017: 594; Xinhua 2015).

Since the launch of the Open Up the West programme in 2000, China has invested massively in long-distance transport infrastructure connecting eastern provinces and the long-underfunded western and northern border regions. Parallel to this, the scope of China's infrastructural activities has expanded on an unprecedented scale into the territories of its neighbours. Since 2013, all the projects in the westward arc have been discursively subsumed under the label of the Silk Road Economic Belt (丝绸之路经济带, Sichouzhilu jingjidai), which together with the Maritime Silk Road makes up the BRI. While China has been intent on these construction efforts in order to enhance its GDP and create technological, labour, resource, capital and political dependencies across Eurasia (Clarke, 2017; Yu, 2017), questions of the fragility of the connectivity that this infrastructure is to establish, as well as the practicalities and politics of infrastructure maintenance, are

E-mail address: agnieszka.joniak-luethi@uzh.ch.

[1] **Present address:** University of Zurich, ISEK Department of Social Anthropology Andreasstrasse 15 CH-8050 Zurich Switzerland.

[2] The Silk Road Economic Belt is part of the BRI. On the historical trade routes and the ways in which the idea of the Silk Road is used in the Economic Belt narrative, see Cooley, 2015; NDRC 2015; Rezakhani, 2010.

[3] 'China to establish $40 billion Silk Road infrastructure fund', 8 November 2014 (http://www.reuters.com/article/us-china-diplomacy-idUSKBN0IS0BQ20141108).

https://doi.org/10.1016/j.polgeo.2019.102122

Received 6 January 2019; Received in revised form 18 November 2019; Accepted 19 November 2019

Available online 26 December 2019

virtually absent from the debate. For example, when we scan through the document 'Vision and Actions on Jointly Building Silk Road Economic Belt and 21st-Century Maritime Silk Road' (NDRC 2015), we find the verb 'maintain' used once, albeit in a non-infrastructure context, and 'upkeep' not used at all. On the other hand, 'construct'/'construction' is used fourteen times, and 'build'/'building' thirty-two times. In a further 130-page BRI roadmap from 2017, 'maintain' is used four times (but only once in the context of infrastructure), while the words 'build'/'-building' are used sixty-five times, and 'construct'/'construction' twenty-six times. The narrative is thus clearly oriented towards construction and not at maintenance of what already exists or that which is currently under construction. In accordance with this discourse, maps of the Economic Belt, which have been continuously produced since the launch of the initiative, depict the roads and railways presently being built and those to be constructed as simple, bold lines across the Eurasian continent, as if they might be unaffected by security concerns, challenging topography and inevitable material decay (see Fig. 1).

In contrast to maps, which focus on the geometrical linearity of connections, I theorize roads as complex bundles of social relations between, among others, humans, materials, capital, terrain, climate, discourses and the state.[4] The shift of perspective from representations of roads as lines to bundles of interwoven social relations draws attention to the inherent liveliness of infrastructure as it is forged from dynamic entanglements between those multiple human and non-human agentive forces (Barry, 2013; Carse, 2017; Harvey & Knox, 2015; Schwenkel, 2015). Further, it is argued here that a focus on decay, the process of disintegration of these relations that make infrastructures, and maintenance – efforts to slow this process down and patch it up – provide fresh entry points for the critical discussion of China's plans of Eurasian connectivity and the ideology of infrastructural modernity more generally, as they are both grounded in the assumption that infrastructure is stable and durable. While the BRI discourse is focused on building and constructing, here rather the contingency of the social relations on which any feat of infrastructure depends is emphasized, as well as the huge amount of work that must be invested to keep it up and running.

Scholars from Science and Technology Studies and Urban Studies explicitly highlight the importance of the mundane work of upkeep and repair, work that is not prestigious but which is essential to keep the world around us going (Denis & Pontille, 2014; Graham & Thrift, 2007; Strebel, Bovet and Sormani, 2019). While the focus of repair and maintenance studies is on innovation, creativity and the mundane invisibility of upkeep, in this article I show that maintenance is also highly political and can be violent and contested (Barnes, 2017). Think, for instance, what it means to maintain the roads that the Chinese companies build for Pakistan through Kashmir – a territory claimed by both Pakistan and India. Moreover, because roads, canals and railways are typically read as materializations of the state (Anand, 2018; Kernaghan, 2012; Mostowlansky, 2017), their decay and the work of maintenance are also read as indexing the broadly understood condition of this very state, and of state–citizen relations (Chu, 2014; Flower, 2004).

The focus on the materiality of roads and the terrain in which they are embedded should underline the need to consider the challenges of infrastructure upkeep as we speculate on the potential geopolitical effects of the BRI. The second aim of this article is to connect to the debate on the increasingly blurred distinction between infrastructure and nature (Hetherington, 2019). In China, which has a long tradition of implementing huge environmental-engineering projects, the distinction between infrastructure and nature might be blurred in different ways than those that accompany the current condition of the planet reflected in the term Anthropocene. Third, the story of a particular desert road and the disappearing river on which it depends, which I tell below, expands the argument for thinking roads and other infrastructures as inherently fragile. This fragility comes from the fact that infrastructures are always 'doubly relational': firstly, on the materials out of which they are built, and secondly, on the economic-political-environmental relations in which their construction and maintenance are embedded (Harvey, Bruun Jensen, & Morita, 2017, p. 5). The last purpose of telling the story of the road and the river is to point to a multi-scalar colonial project initiated by the Chinese state in northwest China's Xinjiang region in the early 1950s and which continues in a different guise today.

1. Roads as lines VS. Roads as social relations

In the fluid landscape of deserts and mountains that characterizes Xinjiang Uyghur Autonomous Region, northwest China, unmaintained roads disintegrate in less time than that needed for their construction. As in the neighbouring regions of Pakistan, Afghanistan, Tajikistan, Kyrgyzstan and also partially Kazakhstan, materials erode quickly there due to the dynamic topography, extreme climate and the socio-political complexity that further challenges the transport infrastructure's capacity to connect. Hence, just what a road – and any infrastructure for that matter – nominally is in such a landscape, what it is capable of doing and for how long, is an entirely open question. All infrastructure under construction here is an 'as-yet-undefined mode of participation' (Harvey, 2018: p. 99) and also non-participation, for example when infrastructure crumbles together with the political-economic relations on which it has been dependent (Reeves, 2014; Mostowlansky, 2017).

In the vision of the Silk Road Economic Belt, Xinjiang is a critical junction on westward land and sea routes. This arid region constitutes one sixth of all Chinese state territory and is located in a geopolitically strategic position at China's borders with Mongolia, Russia, Kazakhstan, Kyrgyzstan, Tajikistan, Afghanistan, Pakistan and India. Xinjiang also shares an extensive border with Tibet, another conflict-ridden region, and is rich in natural resources such as oil, natural gas, coal, gold, uranium and potash. Muslim, Turkic language-speaking Uyghurs, Kazakhs and Kyrgyz, with a combined population of 11.6 million, comprise the majority of the 21.8 million residents of Xinjiang.[5] The Uyghurs, with more than 10 million inhabitants, are the region's largest *minzu*,[6] followed by the Han Chinese (Toops, 2013; XWZCZ, 2005, p. 205). Southern Xinjiang, on which I focus here, is still a Uyghur-dominated region, despite concerted state efforts to increase the share of the Han population there. Southern Xinjiang has been a site of inter-ethnic and anti-state violence rooted in the fact that the multiple claimants to the region have very different views of 'what should be done with [it], how people should act while there, and who should be allowed to live there' (Blu, 1996; compare: Bovingdon, 2010; Cliff, 2012). Following Chinese media reports on Islamic radicalization of southern Xinjiang, and the increasing stake that the Chinese state has in the region with regard to the BRI, surveillance, security expenses and repression have seen a steep rise. A grid-like management of urban areas, a totalitarian control of the everyday life of the Uyghurs and other Muslim inhabitants of the region, and large-scale detention camps where Uyghurs and increasingly also Kazakhs and Kyrgyz are extra-judicially incarcerated have been introduced throughout the region on a large scale since 2017 (Zenz and

[4] For other studies that discuss roads as such fields of engagement, see for example, Campbell, 2012; Harvey & Knox, 2015; Jackson, 2015a; Carse, 2017).

[5] On the Uyghur, who constitute the majority population in southern Xinjiang, see, for example, Bellér-Hann, Ildiko, & Cristina Ces, 2007; Bovingdon, 2010; Thum, 2014.

[6] *Minzu* are officially designated population categories in China; there are 56 of them. *Minzu* is translated either as 'nation' or 'nationality' (in Stalinist terms, which inspired this classification), or more recently and increasingly, especially in the official nomenclature, as 'ethnic group' or simply 'minority' in order to sever the association between the Chinese *minzu* and Soviet 'nationalities', many of which formed their own states after the disintegration of the Soviet Union in 1991.

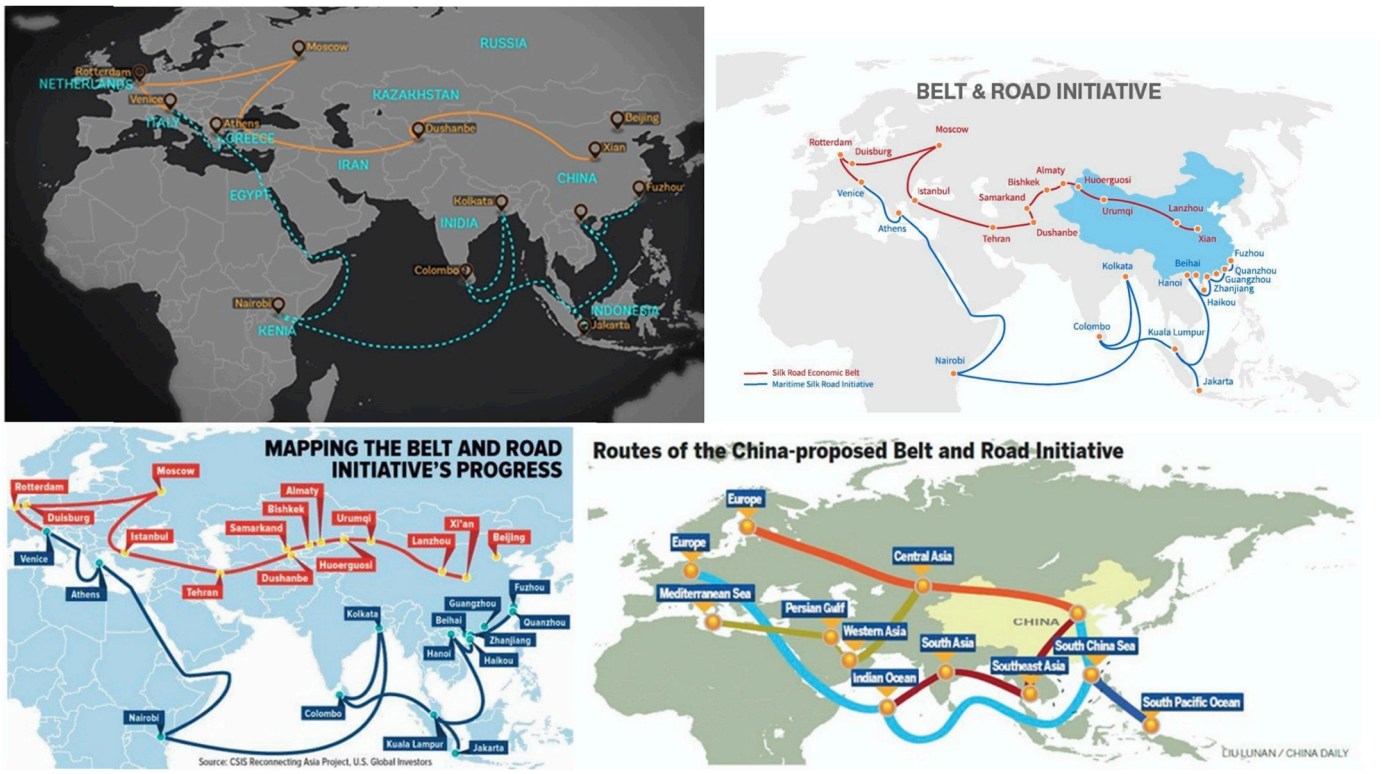

Fig. 1. Cartographic representations of the BRI. Sources: Top left: https://www.worldbank.org/en/topic/regional-integration/brief/belt-and-road-initiative; Top right: https://www.silkroadbriefing.com/news/2018/11/27/chinas-soft-development-strategy-belt-road-initiative/; Bottom left: https://www.forbes.com/sites/greatspeculations/2018/09/04/chinas-belt-and-road-initiative-opens-up-unprecedented-opportunities/#3914dbe43e9a; Bottom right: https://medium.com/venture-views/risk-opportunities-singapores-role-in-china-s-bri-ff6377d035b7.

Leibold, 2017; Zenz, 2018). The way in which Xinjiang has turned into an open-air prison for its Muslim inhabitants over the past few years directly counters the official rhetoric of opening up and facilitated circulation with which China infuses the discourse on the BRI. In southern Xinjiang, the practice shows rather that the state is determined to expand its social-spatial control, for instance through hundreds of roadside checkpoints. While Han Chinese travellers are generally treated benevolently and are able to pass through the checkpoints even without an ID card, Uyghurs and foreigners have their IDs painstakingly scanned and registered at every checkpoint, are prevented from travelling without an official reason and also prohibited from taking some of the roads and entering certain cities. Uyghurs (and foreigners alike) often have no choice but to stay put, also because those with non-local IDs are exposed to an even greater scrutiny. Those few Uyghurs who are able to do so fly, to spare themselves the fuss of travelling along all those newly built, smooth asphalt roads which government policy makes unavailable to them.

The lines of roads on maps of the Economic Belt that are produced by various national and multinational agencies conceal the many ways in which uncertainty and discrimination remain inherent elements of mobility in this region of Asia. Representations of roads as continuous, apparently accessible-to-all, non-valorized lines can thus be, variously, a claim, a fantasy, a desire or a trick. In the practice of 'travelling' (Clifford, 1992), these lines are accessible only to some. They are entangled with ethnicity, gender, household registration (户口, *hukou*), employment and more, each producing specific, stratified geographies of mobility (Chan & Zhang, 1999; Cresswell and Merriman, 2011; Selwyn, 2001; Utang and Cresswell, 2008). As Anna Tsing pertinently observes, 'how we run depends on what shoes we are given to run in' (2005, p. 5). Thus, differentiated mobility regimes have to be reflected on when roads and travel are discussed (Alff, 2016; Dalakoglou, 2010; Joniak-Lüthi, 2016a; Kernaghan, 2012). Another thing that impacts how people, objects and information move is of course the materiality of transport infrastructure. Because materials incessantly erode, infrastructure inevitably decays. In southern Xinjiang, roads are regularly blocked by shifting sand, strong wind and snow, are hardly passable in dusty weather, and frequently destroyed by seasonal floods and landslides. Upon leaving the realm of cartographic representation, the smoothness of transportation lines crumbles. This manifested in the frequent occurrence of the conjunction 'if' in conversations about mobility during my fieldwork. These tended to be accompanied by statements such as '*If* the tunnel is open, we'll be there in the evening', or '*If* the road is flooded, we'll have to sleep somewhere on the way'.[7] Travel-related conversations appeared particularly prone to the conditional.

Hence, while the construction of infrastructure itself is a challenge in southern Xinjiang, I rather want to focus here on what happens after the construction teams wrap up their work and leave. Examination of the mundane social life of roads reveals the complexity of the relations that have to be orchestrated for any road to last and provide connectivity. Regular breaks in traffic along the Karakoram Highway, the only road between China and Pakistan, are but one example, showing the fragility of connectivity in regions where traffic depends on just a few roads. This fragility radiates further, onto other infrastructural projects. The oil pipeline that is to connect the Pakistani port of Gwadar and eastern China via Xinjiang will greatly depend for maintenance on high-altitude roads like the Karakoram Highway and desert roads through southern Xinjiang. In the discourse on the Silk Road Economic Belt, Xinjiang's

[7] The first conversation related to the crossing of Tengri Tagh/Tianshan Mountains from Kuqa to Narat, where we basically drove through a tunnel under construction. The other referred to the seasonal flooding of the southern section of the desert road that is the focus of this article. The road indeed turned out to be blocked for a few days, forcing us to stay overnight in military farms along the way (fieldwork material 2011–2012).

roads figure as simply a passage, a corridor along which people, resources and other commodities will flow on their way to their destinations. Needless to say, in the actual practice of travel, it is those very roads that determine whether things and people do indeed flow, or whether they get stuck.

One such road is a 450 km section of the national highway (国道, *guodao*) no. 218 in southern Xinjiang (see Figs. 2 and 3). Like the Karakoram Highway, this is a major link in the westward arc of the Economic Belt. The area that the road crosses is extremely arid; it is the easternmost of the three existing desert highways (沙漠公路, *shamo gonglu*), which connect the northern and southern rims of the Taklamakan Desert that occupies most of southern Xinjiang. The Tarim River, along which the road was originally built, acts as the border between the Taklamakan Desert to the west and the Kurugh Tagh Desert to the east. The road provides a connection between the oil city of Korla at its northern tip, the agricultural areas along the Tarim and Konchi/Kongque rivers,[8] six regiments of the paramilitary Production and Construction Corps (新疆生产建设兵团, Xinjiang Shengchan Jianshe Bingtuan[9]) in the desert along the road, oil extraction sites and the strategically crucial oasis of Charklik/Ruoqiang at its southern end. The small town of Charklik is the only natural oasis in this corner of Xinjiang and the only non-military settlement in a radius of several hundred kilometres. Charklik, and the no. 218 road which merges here with the highway that runs eastwards, are part of the 'national defence line' (国防□, *guofang xian*). The two roads provide the shortest connection to deploy the army to southern Xinjiang and to China's borders with India, Pakistan, Afghanistan, Tajikistan and Kyrgyzstan from inner China. They also form the shortest route for Han Chinese migrant workers to access southern Xinjiang. It is on water from the Kunlun Mountains that the oasis of Charklik with its mixed Uyghur, Hui/Dungan and Han population depend, and which makes human life and travel in this region possible at all. On the other hand, the town's population, as well as the extractive industry and army installations located in the desert all depend on the desert road for transport. Thus, in the current political geography of northwest China, Charklik is a 'bridgehead'[10]: it is essential to maintaining the material presence of the state – through roads, roadside checkpoints and military farms, among others – in this vast and extremely sparsely populated landscape (cf. Murton, 2017). Seen from the framework of the Silk Road Economic Belt, Charklik sustains one of only two existing road arteries connecting eastern China, Xinjiang and the countries to the west.

The history of (dis)connectivity along the desert road, which I introduce below, demonstrates the difficulty of understanding, let alone controlling, the relationship between infrastructure and the environment. In my discussion of this relationship and other relations that entwine in this road, I draw on primary Chinese-language sources, such as county gazetteers, maps, road and transportation annals, and government websites. This Chinese-language material represents a specific narrative, one that focuses on Yuan dynasty, Qing dynasty, Nationalist and Communist efforts to control this road. The second source of information is the conversations with Xinjiang Han and Uyghur scholars who have conducted research in the area along the road since the early 2000s. These sources are further complemented by ethnographic material I have collected when travelling on this road and staying in the settlements along it on multiple occasions during my ten months of fieldwork in Xinjiang in 2011–2012, and during a following fieldwork stay of three months in 2015–2016.

2. Transitory materiality of the road

The aim of the historical overview that follows is to shed light on roads as inherently lively objects. This liveliness is grounded in the contingency of the social, material, discursive and other relations of which they are a part. In the context of the Silk Road Economic Belt, the overview should contextualize the current construction boom in a long perspective of ongoing efforts to establish connectivity in this part of Asia, and draw attention to the 'on-the-ground' vulnerability of the infrastructures being built. Chinese border regions abound in ruins, the legacy of earlier developmental campaigns: villages to which people never moved, urban neighbourhoods that stand empty, development zones that have not attracted businesses and bombastic museums that do not house any exhibitions. These modern ruins suggest that construction in China is often linked to speculation, corruption and short-sighted megalomania (Kobi, 2016; Woodworth, 2012), with infrastructures not necessarily built to serve people but to create quick revenue and moments of splendour for politicians. Thus, the question that must be asked is: How many of the projects pursued in the name of the New Silk Road, as which the Economic Belt is sometimes referred to, will turn into similar modern ruins when the major thrust of the BRI is over?

The region on which this article focuses was traversed by various communication routes in the past. From the second century BCE, one of the east–west trade routes between the Chinese Han Empire (206 BCE–220 CE) and Transoxiana crossed this area, linking the ancient oases of Dunhuang, Miran and Loulan. When the shift of the Tarim and Konchi riverbeds in the fourth century CE left Loulan without water, the caravan route moved but continued to be used until the thirteenth century, when further climatic changes led to its abandonment. It was at about this time that the north–south route, the predecessor of today's desert road, emerged. The Mongol Yuan dynasty (1279–1368) regarded it as important enough to set up postal stations along its length. Simple bridges were also built and ferry services on river crossings were established for the caravans of horses, donkeys and camels. The road is referred to in historical documents as the 'officials' road' (官方大道, *guanfang dadao*) and was the main link connecting the southeast Tarim Basin to the outside world (RZBW, 1992, p. 214; YDBW, 1993, p. 173).

The Mongols made attempts to pin this caravan path to the ground by establishing the postal stations; however, the fluid topography of wandering sand dunes and meandering and seasonal rivers means that it would be a mistake to imagine any path as a fixed element of the terrain. Rather, the pathways were always shifting. The nineteenth-century efforts of the Manchu Qing dynasty (1644–1911) to discipline the route make clear that its materiality remained difficult to control over the centuries. Under the Qing, the path was elevated where it crossed salty marshes, tamarisks were planted along its edges to prevent the path from disappearing and road signs were installed at intervals of 5–10 *li* (里).[11] The Qing also established stations along the route to assure ease of communication and circulation of official documents. In 1884, with Xinjiang's incorporation into the regular imperial administration, these stations were transformed into postal stations (YDBW, 1993, p. 173). Soon after, in 1891, settlement along the northern section of the path, beside the meandering Tarim and Konchi rivers, was initiated and 1,400 Han Chinese families from outside Xinjiang were moved there to engage in agriculture (YDBW, 1993, p. 173). Imperial troops were also stationed along the path and small merchant colonies grew around postal stations to cater to soldiers and other travellers. Though the actual marks of the route in the terrain remained largely transitory, the connection did attract significant attention from the imperial authorities and attempts

[8] I provide both Uyghur- and Chinese-language versions of a toponym where it appears for the first time. Afterwards, I use Uyghur names.

[9] The Production and Construction Corps is a paramilitary organization with more than 2.5 million members, the overwhelming majority Han Chinese. The Corps combines military, agricultural and construction roles. It is independent from regional authorities and is under the direct jurisdiction of the central government. It has a strategic role in marking the presence of the Chinese state in Xinjiang, securing the borders as well as major watercourses and transport lines, and providing military backup in case of tensions.

[10] http://news.ts.cn/content/2015-04/29/content_11241457.htm.

[11] These are 2.5–5 km.

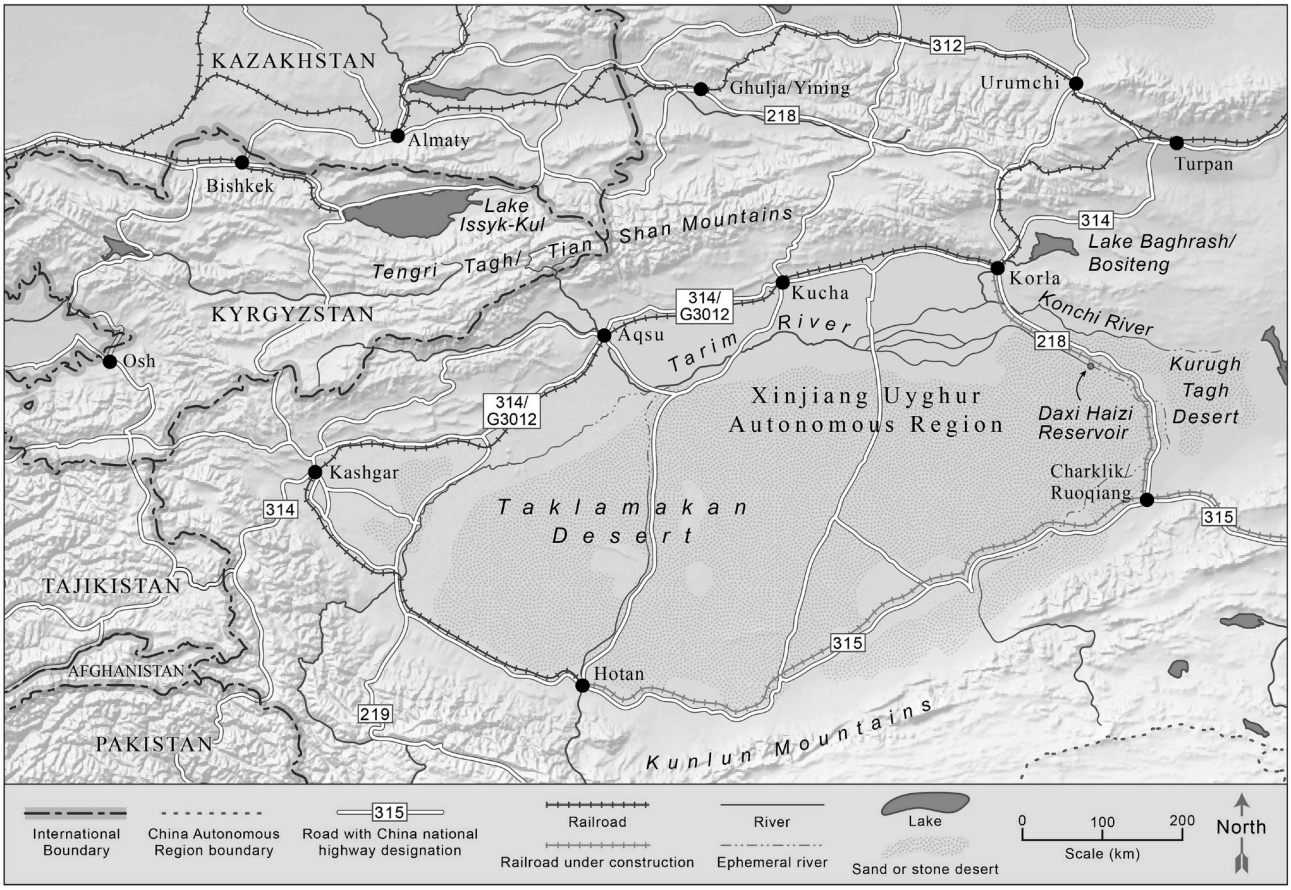

Fig. 2. Map of southern Xinjiang, © James DeGrand.

were made to secure it, especially along the northern section, where some irrigated agriculture was possible.

After the fall of the Qing empire in 1911, it appears that the route remained outside the immediate interest of the government of the young Republic of China until the early 1940s, when the government allocated substantial funds for the construction of a road between Korla and Charklik (XWZJSBW, 1992, pp. 64–6). For a lack of better material, the roughly 10,000 farmers mobilized to build it basically 'wove' a 4.5 m-wide road from the branches of tamarisks, poplars, reeds and dogbane (XWZDBW, 1998, p. 110). However, as no maintenance was conducted, within a few years the disintegrating plant mat/road was repurposed as firewood by locals.

In the first decade following the establishment of the People's Republic of China in 1949, little changed in terms of technology and materials. Spontaneous construction efforts initiated by the local county governments alternated with phases of rapid decay. Pack animals, mainly horses and donkeys, and animal-pulled carts were the lynchpin of local transport, and thirty-five days was the approximate duration of the 900 km return journey between Korla and Charklik in the mid-1950s. Still, the path made it possible for Han Chinese settlers to advance into the desert along the Tarim river to 'open up the wasteland' (*kaihuang*) and set up the bridgeheads of Chinese Communist statehood. This is shown in the family story of Mr Zhao, a Han Chinese bus driver from Charklik, whose father settled there in 1955. Mr Zhao said: 'The journey from Korla took my father fifteen days. He travelled on a cart pulled by a donkey, transporting a telegraph – a huge machine people have never seen here before. As a telegraph and radio operator, he was sent to establish and operate a telegraph station in [Charklik]. You know how it was back then, though he was not in the army, all the same he had no choice but to follow the state orders and settle here' (Fieldwork interview, winter 2015).

Despite poor travelling conditions, in 1956 a 'regular' postal and passenger service was officially launched and the sand track was nominally opened to motorized traffic (RZBW, 1992, p. 216). The county of Charklik then received its first motorized vehicles: one Soviet GAZ-69 four-wheel drive and one Liberation Truck (解放车, Jiefangche). As the road was crucial to provisioning Charklik and to securing access to the Tarim River, along which military farms were set up, over the next decade further rounds of roadworks were undertaken (RZBW, 1992, p. 219).

The first centrally orchestrated attempt to upgrade this connection was launched in the mid-1960s, when the road was incorporated into the Third Front construction drive, which assured the influx of some central funding (XJSBW, 1998, p. 157; YDBW, 1993, p. 174).[12] In 1966, a survey team proposed a new route for the planned 3.5 m-wide road, positioned more favourably in relation to the river courses, and designed for a daily capacity of one hundred Liberation Trucks. Most of its length was to receive a gravel and saline soil surface (XWZDBW, 1998, pp. 110–11). However, despite a vigorous start, construction soon stagnated. In practice, many more maintenance stations, bridges and drains than planned were necessary. Moreover, gravel that was to be transported from a site 70 km distant turned out to be unreachable in a terrain without roads. The fact that the commencement of construction coincided with the beginning of the Cultural Revolution (1966–76), and thus increased difficulties in finding construction workers, further complicated the picture. Facing a looming failure, road engineers spontaneously changed construction strategy and decided to build sections of the

[12] Third Front construction aimed at establishing an industrial, scientific and technological base away from China's coast and land borders, and to prepare the country for combat by improving its transport infrastructures.

Fig. 3. The national highway no. 218 between the 34th military farm and Charklik. Photo: Author, 2012.

road out of bricks, which could be produced locally (XJSBW, 1998, p. 158). Kilns were thus hastily built and, as the construction proceeded, thousands of trees growing along the lower Tarim River – mainly poplars, tamarisks and saxauls – were felled to heat the ovens. The roughly 100 km brick road has since been praised in local annals as a brilliant example of drawing on indigenous materials and knowledge in modern road construction (XJSBW, 1998, p. 159). In terms of its environmental ramifications, however, the decimation of the forests growing along the Tarim still reverberates throughout the whole of southeast Xinjiang. The felling of the forests, through which the road was actually built for its protection from the sun, wind and sand, also had disastrous consequences for its further maintenance.[13]

Through the 1970s, the desert road was in the process of assuming shape in some sections, while simultaneously disappearing in others. This ephemeral existence is perhaps best reflected by its description in *Police News* (Zhu, 2013, p. 79) as 'the marks of wheel-ruts that were somewhat reminiscent of a road but at the same time were not really a road' (似路非路的车辙印, *silu feilu de chezheyin*). In spite of its ephemeral materiality, in the 1980s the desert road was classified as a section of the no. 218 national highway and its enhanced administrative status materialized in asphalt, with which some sections were gradually paved in the 1980s and 1990s. Still, the single-layer asphalt surface had basically disintegrated after a few years and the road largely resumed its sand and stone existence. A Han research participant from Charklik, who has travelled this road regularly for work over the past twenty-five years, recalled the journey in the 1990s: 'When the bus from [Charklik] arrived in Korla everyone and everything was covered in sand dust. You could not see anything through the windows, they were covered with dust, and the passengers looked like they were made of dust (土人, *turen*)'.[14]

The bumpy and dusty materiality of the road changed dramatically in the early 2000s, with further professionalization of road construction and the increased investment that arrived in Xinjiang following the launch of the Open Up the West programme (see Fig. 4). The road was then asphalted for the first time along its whole length. Although the asphalt surface often heats up to more than 60 °C on summer days and is associated with a high death toll due to the increased speed of travel, all my Uyghur, Han and Hui/Dungan research participants who inhabit dusty settlements and are used to gravel-sand tracks enjoy the new bodily comfort of mobility afforded by asphalt. Zhang, a Han woman in her fifties, and Sun, another Han woman in her seventies, both raised in the 34th military farm, narrated the changes as follows:

> *Agnieszka: How was it here when you were young?*
>
> *Sun: At the beginning [in the 1960s], there were no trees in the settlement. When we came, at first we lived in simple huts built of dried bricks (tuzhang), there were no burnt bricks (kuangzhuang) back then.*
>
> *Zhang: The other thing that changed is transport – it got so much easier. First, they paved the main [desert] road, and then this road that goes into our settlement. Earlier there was such deep dust (tu) that you walked in it up to your knees. And now? Look! In a couple of years the state will build an expressway here!*

[13] http://www.chinahighway.com/news/2004/76961.php.

[14] Fieldwork interview, Korla, summer 2015.

Fig. 4. The road connecting Charklik with the Qinghai Province to the east. Photo: Author, 2016.

Fig. 5. Monument celebrating the pioneers of the 34th military farm erected at the roadside in the central settlement of the farm, facing the road. In the background, newly-built apartment houses along the main street leading into the settlement. Photo: Author, 2016.

Agnieszka: We are in the middle of a desert, not many people live here, why would you need an expressway?

Zhang and Sun, nearly in unison: There will be so many people coming! Korla is a central transport node. People travelling there … will all be passing through here!

(Fieldwork interview, winter 2015)

Zhang and Sun, and many other inhabitants of the military farms, consider themselves in pole position to profit from the future 'flows' that they see increasing year on year. In the early 2010s, when the desert road was reconstructed and the road leading eastwards from Charklik was asphalted, the asphalt brought about a tenfold increase in the number of 30+ tonne trucks on the road from the previous 200–300 to 2,000–3,000 a day (Zhu, 2013). The road currently carries the bulk of trucks transporting goods between inner China, Xinjiang and Xinjiang's western borders, where the goods are reshuffled onto trucks taking them to Pakistan, Kyrgyzstan, Kazakhstan and Tajikistan. Without toll gates and weight-control stations, and also largely sans police presence due to the unbearable climate, the road is favoured by truck drivers who mostly travel by night to avoid the sun and heat. Following the upgrade of the road and the increase in traffic, the roadside catering industry is also growing, wherever water is made available. While a few Uyghur restaurants and shops exist, the majority of the simple hostels, car repair workshops and restaurants that cluster along the desert road are run by Han Chinese and Hui/Dungan migrants from other parts of Xinjiang, and from other parts of China. These cater predominantly to Han and Hui truck drivers and Han passengers on long-distance buses who come to southern Xinjiang in search of seasonal work in agriculture, extractive industries and construction.

As the flows along the road increase, the roadside is also used by state agencies to create a sort of cinematic show of power for the people sitting in cars, buses and trucks for many hours, as they watch the landscape. The Chinese state not only simply marks its presence through roads, but also attempts to attach certain attributes to this presence. A Uyghur man from Korla who has regularly travelled along the desert road since the mid-1990s pointed this out to me, saying: 'Earlier, military farms were deeper in the desert, some kilometres away from the road. You couldn't see them. Now they build their representative buildings along the road: the multistorey houses, police stations, monuments, fancy squares decorated with flowers which need constant watering. They build along the road to demonstrate their presence and power. This is how I see it' (Fieldwork interview, summer 2016) (see Fig. 5).

As the roadside undergoes a significant redecoration, the Chinese central government is placing growing expectations on the desert road which, together with the link eastwards, should form one of the trunk connections in the prospective Economic Belt.[15] At the same time, the topography and climate have proven to be powerful adversaries to government plans and road constructors, especially since the riparian forest along the lower Tarim was brought to the verge of extirpation in the 1970s due to the felling of trees for road construction, and the parallel over-draining of the Tarim for irrigated cotton agriculture. Strong winds from the northeast, which blow on more than half the days in the year, bringing dusty weather and sandstorms, further complicate government plans. Despite huge changes in road materiality, when the sandy wind blows the road disappears from view, just as it did twenty or seventy or a hundred years ago. In spite of the progress in construction technology and materials, which has been impressive and which can be experienced bodily on the road, an unmaintained highway would soon disappear in this sandy topography. Frost heave, seasonal floods and the combined forces of sand, salt and sun continue working towards its disintegration. Today, maintenance of the desert road includes sand clearing, regular renewal of sand-fixing reed grids and watering of vegetation shelterbelts, among many other things.[16] Nevertheless, all road maintenance measures are contingent on the Tarim River, the only supply of water in this region of Xinjiang. However, the Tarim is also the source of water for the cotton agriculture in the desert, the main crop produced by the military farms. Due to overdraining by the farms in the 1970s, the riparian ecosystem in which the road was built for protection was dangerously close to collapse throughout the 1980s and 1990s. It was in this tense context that a billion-dollar project was launched in 2000, as discussed in the following section.

3. The road, the river, the trees

The Tarim River, on which the roads as well as the oases in the northern and eastern part of Taklamakan desert depend for existence, is China's longest inland watercourse and once had a length of 1,321 km. The Tarim is primarily fed by glacial- and snow-melt, and precipitation from the Tengri Tagh/Tianshan Mountains. However, the river basin itself, which comprises most of southern Xinjiang, is characterized by an extremely arid continental climate, with annual precipitation of 20–50 mm and a potential evaporation of about 2,500–3,000 mm (Aishan et al., 2013, p. 156). Since the 1950s, when the Chinese government

[15] Together with the northern link via the Gansu corridor.

[16] Because maintenance work is lonely, maintenance stations along the road are run by married couples forming 'husband-wife stations' (夫妻站, *fuqi zhan*).

Fig. 6. Euphrates poplars together with reed grids stuck in the sand should keep the sand from encroaching onto the road. Photo: Author, 2011.

launched politically and ecologically controversial projects of large-scale Han Chinese settlement, land reclamation and irrigated cotton agriculture in southern Xinjiang, water consumption has soared. Within fifty years, the amount of water used for irrigation increased exponentially from 5 to 20.2 billion m^3 (Chen, Ye, & Shen, 2011, pp. 264–6).

As water was diverted to large-scale agriculture and to support the quickly growing Han population along the upper reaches of the river, less and less of it reached the main course and, in the early 1970s, the last 320 km of the Tarim desiccated – precisely the section of the river along which the desert road was built. In the aftermath of the lower Tarim's desiccation, wind erosion and desertification grew in the area, and the groundwater level dropped by 10–12 m, making it unreachable for plants (Chen et al., 2011, p. 264; Aishan et al., 2013, p. 156; Li, Chen, Zhang, & Xia, 2009). This resulted in the dying out of the riparian forest, which in the past formed a 5–10 km-wide belt along the river in which communication lines have nestled for centuries. The size of the forest shrunk from around 54,000 ha in the 1950s to a mere 7,300 ha in the late 1990s (Zhang, Wu, Wang, & Li, 2010, p. 45). Due to the reduction in trees, with their soil stabilization and water retention properties, the already vulnerable desert road was now even more frequently buried by sand at almost 200 locations.[17] So, the dead trees laid bare the fragility of connectivity in this corner of Xinjiang.

To restore the river and the trees, and thus assure the existence of the road and the military farms along it, the central state launched a bold engineering project of Ecological Water Diversion (生态输水, *shengtai shushui*). Between 2000 and 2012, nearly 11 billion RMB (1.7 billion USD) was invested in this project to divert water from Baghrash/Bositeng Lake at the northern tip of the desert road directly to the lower Tarim, with the aim of recharging groundwater up to the level where the natural flora could be revitalized (Li et al., 2009, p. 533). The biannual water releases have indeed led to partial recovery of the damaged forests and many trees, after nearly thirty years showing no signs of life, became green again – an event that a Han road maintenance worker from Charklik described as 'a wonder' (see Figs. 6 and 7).

The Tarim Management Office – the agency that coordinates the project – celebrates the Ecological Water Diversion project as a victory for the ecologically sensible state, boasting that the forests have recovered and improved, the salinity of groundwater and desertification decreased, and the problem of sand encroaching onto the road 'has basically been solved' (基本得到解决, *jiben dedao jiejue*).[18] What remains outside of the government discourse but is discussed by Xinjiang Uyghur and Han scientists, and by the Uyghur and Han inhabitants of roadside settlements, is that overall water consumption in the upper and middle reaches of Tarim has not been reduced and thus desiccation is, in fact, increasing on a wider scale. The partial restoration of the river and the riparian forests has only been possible through a parallel significant reduction of the water body in Lake Baghrash, which will likely be empty by 2030, if not sooner (Li et al., 2009, p. 534).

Fig. 7. An idyllic view of Tarim, *when* the water flows. Photo: Author, 2011.

4. For whom does the water flow?

Han and Uyghur scientists, with the latter especially often censoring their research and publications (Joniak-Lüthi, 2016b), argue that water management of the Tarim and the Water Diversion project have laid bare a severe conflict between agriculture and ecological conservation, and between humans and nature contending for limited water resources (Chen et al., 2011, pp. 264, 269). However, similar to the criticism of the Anthropocene understood as a product of an unspecified 'humanity', also in Xinjiang it is not undefined 'humans' who have brought about the current environmental predicament. Rather, the Tarim has been drained to an enormous degree by large-scale agriculture, the oil industry and the hydro-power industry, all of which are dominated by the Han. Moreover, the notion of a unitary 'nature' when applied to the situation where a huge lake is drained to restore a river that was previously drained for cotton agriculture equally exceeds the simplistic humans–nature binary used by Chinese scientists diplomatically to avoid spelling out the names of the doers. What we rather see in southern Xinjiang is that multiple state institutions, agendas and interests tread on each other's toes in competition over what little water is available. Without the Tarim River and the trees that feed on it, both the desert road and the military farms cannot be sustained. As the road became a part of president Xi Jinping's Silk Road Economic Belt vision in 2013, the paucity of water also means that this vision will not be possible to sustain. Hence, the poplar and tamarisk forests, the river, the road, the military farms, state security, the economy and China's plans for Eurasian connectivity all intertwine here in relations of simultaneous interdependence and competition.

The growing stakes that the Chinese state has in the desert road currently depend on a highly uncertain contract between the government that funds the Ecological Water Diversion project and the restored poplars, which are expected to provide an ecosystem service (生态系统

[17] http://www.tahe.gov.cn/zhuanti/sszt/bj.html.

[18] http://www.tahe.gov.cn/zhuanti/sszt/bj.html.

□务, *shengtai xitong fuwu*) of protecting the state-built infrastructure.[19] However, even at the extremely high capital and ecological costs as are currently the case, the capacity of the trees to do this, and thus the capacity of the road to perform as the major link in the prospective Economic Belt in a long-term perspective, remains questionable. The search for ways to restore the riparian ecosystem in which earlier roads found protection from the desert is restrained by a number of powerful and apparently unquestionable political imperatives. In the tradition of the early Communist strategists, the government appears determined to encourage Han settlement and maintain military farms along the Tarim and along the major traffic routes. The government is also determined to carry on resource extraction, dam the few rivers for 'green' energy production and continue urban expansion and infrastructure construction. As southern Xinjiang is a geopolitically central and resource-rich but restive region, reduction of water use for any of these activities, with each of them expanding the Han Chinese presence in this violence-ridden area, is politically non-negotiable. Thus, the competition over water between military farms, PetroChina, China Railway Engineering Corporation, the army and the Forestry, Water Management, Road and Transportation Bureaus continues, and so does the instrumental approach to ecosystems as though they were contained and disconnected wholes.

The increased attention devoted to the desert road, and the current construction of the railway parallel to it, inscribe themselves in the narrative of facilitated circulation and flows advertised by China as the main purpose of the emerging Silk Road Economic Belt. Zooming back in on southeast Xinjiang reveals that the gap between the discourse of flows and the social-ecological context in which these flows should be taking place is potentially large.

5. Conclusion

Infrastructure construction attracts attention. In this article I argue that it is just as important to focus on the mundane life of roads, when the necessity to maintain things becomes visible, and the social complexity pertaining to any feat of infrastructure comes to light. While constructing 1 km of paved road worldwide costs on average about 900,000 USD (Archondo-Callao, 2000), the maintenance costs of sand-fixing grids along the desert highway in southern Xinjiang ran to nearly 1 million USD per kilometre over ten years (Fieldwork material, Charklik 2015). Combined with the costs of upkeep of the asphalt and the roadbed, repairs to drip irrigation systems and regular sand clearing, ongoing maintenance costs are massively higher than those for initial construction. Concurrently, as demonstrated above, even with huge financial investment and concomitant high ecological costs, long-term connectivity along the desert road is still not secured. The difficulty of disciplining southern Xinjiang's terrain to comply with the state agenda manifests in the fact that this huge, strategically pivotal, resource-rich and volatile region is today linked with inner China by only one direct road via Qinghai province and another more roundabout route through eastern Xinjiang and Gansu.

Steven Jackson emphasizes the importance of discussing repair as a way to deconstruct 'seemingly unassailable systems' such as market, capital and modernity. 'To forget repair is to risk … granting [such systems] a power and permanence they may not … deserve' (Jackson, 2015b). Rephrasing Jackson's postulation, I argue that by not paying attention to decay and maintenance we might be granting the BRI a power that it may not, or at least not yet, deserve. Amid the currently booming interest in the BRI, which has produced a large and constantly growing number of geopolitical and foreign policy analyses of its potentialities and limitations (Aoyama, 2016; Bai & Wang, 2014; Blanchard & Flint, 2017; CBRI, 2017; Hu, Ma, & Yan, 2014; Sidaway and Chih, 2017), I suggest ethnographic zooming in on transport infrastructures that should carry the vision of the Economic Belt and a consideration of their ambiguous complexity. Research on China-built infrastructures in Africa (Nielsen, 2012) demonstrates that the objectives of Chinese road construction cannot be captured in any simple functionalist argument. Construction may not aim at establishing connectivity, and maintenance at upholding such connectivity, both rather being part of larger business dependencies, rhizomatic loyalty entanglements, political agendas, export of surplus labour and attempts to boost domestic production. Therefore, ethnographic research is necessary to study what actually happens on the ground, that is, where normative ideas become entangled in social relations that transform the original intentions, often unrecognizably, and where grand strategies disintegrate into situated social practice.

The history of the desert road underlines that construction and decay are two sides of the same coin, and that they have always alternated in quick succession in southern Xinjiang. The idea of a connection across this part of the Tarim Basin has been quite resilient over the centuries. Yet, the actual caravan trails have always dynamically adjusted to changing political regimes and to the fluid topography of moving sand, ephemeral lakes, meandering rivers and eroding mountains. In contrast to the earlier tracks made by human feet and animal hooves, the desert road of today appears fixed in the terrain by its asphalt. However, the lifespan of such material in this climate is short. And the road will shift again, or perhaps it will even be abandoned when the desert expands and the people emigrate. The desert road is thus a lens to focus attention on the inherent fragility of roads in regions like the Sino–Inner Asian borderlands. This fragility is implicated in the dynamically changing social relations between the ecosystems, humans, materials, state agendas and capital, and radiates onto other infrastructures, such as pipelines or oil extraction installations, which depend on roads for access and maintenance.

In the case of the desert road, the costly attempts to revitalize the poplar forests reveal that the vulnerability of human infrastructure is recognized by the Chinese central state, as is the inability of people to effectively sustain it in the long run. Thus, the state has attempted to restore the river and the trees to the degree necessary to provide a deeper-level 'nature infrastructure', in which the road and the settlements can be embedded. The case at hand demonstrates how an ecosystem is first destroyed for large-scale agriculture and then recreated to the detriment of another ecosystem to maintain transport infrastructures. In so doing, the article makes the case for considering infrastructure maintenance as at times necessary, desired and indeed vital to keeping our world going, but at other times as a contested and also violent work of care (Puig de la Bellacasa, 2017). In countries where state agendas and investment in infrastructure are as tightly bound together as they are in China, the work of maintenance is necessarily also part of processes aiming at the reproduction of the political, even if the outcomes of this work are never straightforward. This demands paying attention not so much to the general question of whether things are maintained, but rather to how maintenance is conducted, what exactly is being maintained, for what purposes and at what and whose costs (Joniak-Lüthi, 2019).

The desert road is fragile: not only do the materials out of which it is built erode quickly but also the 'nature culture' in which it is embedded is in a process of constant flux. The uncertainty of the deal based on draining a lake in order to refill a river to maintain the state infrastructure raises broader questions of how – and especially how long – connectivity along this and similar roads in the westward arc of the Economic Belt can be sustained, and what connections and fissures will come into being afterwards.

[19] An ecosystem service refers to 'the set of ecosystem functions that are useful to humans' (Kremen, 2005, p. 468). It is argued that ecosystem services have a monetary value and economic potential which must be recognized by governments.

Declaration of competing interest

None.

Acknowledgments

I would like to thank the editors of this special issue and the three anonymous reviewers for taking the time to think through my ideas and provide their extremely helpful feedback. I would also like to thank the Swiss National Science Foundation and the German Federal Ministry of Education and Research for the financial support of my research in Xinjiang between 2011 and 2016. Last but not least, I would like to say a heartfelt thank you to my research participants and academic collaborators in Xinjiang. It weights heavily on my heart to know that most of them have been illegally detained, but I still hope that a future in which we will be able to sit together and hold debates while swallowing tonnes of *kawap* and *naan* will come again, even if it seems so improbable today.

References

Aishan, T., et al. (2013). Monitoring the hydrological and ecological response to water diversion in the lower reaches of the Tarim River, Northwest China. *Quaternary International, 311*, 155–162.
Alff, H. (2016). Getting stuck within flows: Limited interaction and peripheralization at the China-Kazakhstan border. *Central Asian Survey, 35*(3), 369–386.
Anand, N. (2018). A public matter: Water, hydraulics, biopolitics. In N. Anand, A. Gupta, & H. Appel (Eds.), *The promise of infrastructure* (pp. 155–172). Durham: Duke University Press.
Aoyama, R. (2016). "One belt, one road": China's new global strategy. *Journal of Contemporary East Asian Studies, 5*(3), 3–22.
Archondo-Callao, R. (2000). *Roads works costs per km*. World Bank Reports: http://siteresources.worldbank.org/INTROADSHIGHWAYS/Resources/338993-1122496826968/kmcosts.pdf.
Bai, Y., & Wang, S. (2014). Sichou zhilu jingjidai de zongshen beijing yu diyuan zhanlüe [In-depth analysis of Silk Road Economic Belt's background and geostrategy]. *Gaige [Reform], 3*, 64–73.
Barnes, J. (2017). States of maintenance: Power, politics, and Egypt's irrigation infrastructure. *Environment and Planning D: Society and Space, 35*(1), 146–164.
Barry, A. (2013). *Material politics: Disputes along the pipeline*. Chichester: Wiley Blackwell.
Bellér-Hann, I., Cesàro, M. C., Harris, R., & Smith Finley, J. (Eds.). (2007). *Situating the Uyghurs between China and central Asia*. Aldershot and Burlington: Ashgate.
Blanchard, J.-M. F., & Flint, C. (2017). Special section: The geopolitics of China's Maritime Silk road initiative. *Geopolitics, 22*(2).
Blu, K. I. (1996). "Where do you stay at?": Homeplace and community among the lumbee. In S. Feld, & K. H. Basso (Eds.), *Senses of place* (pp. 197–228). Santa Fé, New Mexico: School of American Research Press.
Bovingdon, G. (2010). *The Uyghurs: Strangers in their own land*. New York: Columbia University Press.
Campbell, J. M. (2012). Between the material and the figural road: The incompleteness of colonial geographies in amazonia. *Mobilities, 7*(4), 481–500.
Carse, A. (2017). An infrastructural event: Making sense of Panama's drought. *Water Alternatives, 10*(3), 888–909.
CBRI. (2017). China's belt and road initiative: Views from along the Silk road. *Asia Policy, 24*, 65–122.
Chan, K. W., & Zhang, L. (1999). The hukou system and rural–urban migration in China: Processes and changes. *The China Quarterly, 160*, 818–855.
Chen, Y., Ye, Z., & Shen, Y. (2011). Desiccation of the Tarim river, Xinjiang, China, and mitigation strategy. *Quaternary International, 244*, 264–271.
Chu, J. Y. (2014). When Infrastructures attack: The workings of disrepair in China. *American Ethnologist, 41*(2), 351–367.
Clarke, M. (2017). The belt and road initiative: China's new grand strategy? *Asia Policy, 24*, 71–79.
Cliff, T. (2012). The partnership of stability in Xinjiang: State–society interactions following the july 2009 unrest. *The China Journal, 68*, 79–105.
Clifford, J. (1992). Travelling cultures. In L. Grossberg, C. Nelson, & P. Treichler (Eds.), *Travelling cultures* (pp. 96–116). New York: Routledge.
Cooley, A. (2015). New Silk route or classic developmental cul-de-sac? The prospects and challenges of China's OBOR initiative, PONARS Eurasia. *Policy Memo, 372*. July 2015 http://www.ponarseurasia.org/memo/new-silk-route-or-classic-developmental-cul-de-sac.
Cresswell, T., & Merriman, P. (Eds.). (2011). *Geographies of mobilities: Practices, spaces, subjects*. Farnham: Ashgate.
Dalakoglou, D. (2010). The road: An ethnography of the Albanian–Greek cross-border motorway. *American Ethnologist, 37*(1), 132–149.
Denis, J., & Pontille, D. (2014). Maintenance work and the performativity of urban inscriptions: The case of Paris subway signs. *Environment and Planning D: Society and Space, 32*, 404–416.
Flower, J. M. (2004). A road is made: Roads, temples, and historical memory in ya'an county, sichuan. *Journal of Asian Studies, 63*(3), 649–685.
Graham, S., & Thrift, N. (2007). Out of order: Understanding repair and maintenance. *Theory, Culture & Society, 24*(3), 1–25.
Harvey, P. (2018). Infrastructures in and out of Time: The Promise of Roads in Contemporary Peru. In N. Annand, A. Gupta, & H. Appel (Eds.), *The promise of infrastructure* (pp. 80–101). Durham: Duke University Press.
Harvey, P., Bruun Jensen, C., & Morita, A. (2017). Introduction: Infrastructural complications. In P. Harvey, C. Bruun Jensen, & A. Morita (Eds.), *Infrastructures and social complexity: A companion* (pp. 1–22). London: Routledge.
Harvey, P., & Knox, H. (2015). *Roads: An Anthropology of infrastructure and expertise*. Ithaca and London: Cornell University Press.
Hetherington, K. (Ed.). (2019). *Infrastructure, environment, and life in the Anthropocene*. Durham: Duke University Press.
Hu, A., Ma, W., & Yan, Y. (2014). "Sichouzhilu jingjidai": Zhanlüe neihan, dingwei he shixian lujing [Silk Road Economic Belt: Strategic intentions, positioning and implementation]. *Xinjiang Shifan Daxue Xuebao [Journal of Xinjiang Normal University], 35*(2), 1–5.
Jackson, S. L. (2015). Dusty roads and disconnections: Perceptions of dust from unpaved mining roads in Mongolia's south gobi province. *Geoforum, 66*, 94–105.
Jackson, S. (2015). *Repair: Theorizing the contemporary*. Cultural Anthropology. https://culanth.org/fieldsights/720-repair.
Joniak-Lüthi, A. (2016). Roads in China's Borderlands: Interfaces of spatial representations, perceptions, practices, and knowledges. *Modern Asian Studies, 50*(1), 118–140.
Joniak-Lüthi, A. (2016). Disciplines, silences and fieldwork methodology under surveillance. *Zeitschrift für Ethnologie [Journal of Anthropology], 141*, 197–214.
Joniak-Lüthi, A. (2019). Maintaining whose Road? In F. Martínez, & P. Laviolette (Eds.), *Repair, brokenness, breakthrough: Ethnographic responses* (pp. 145–148). New York and Oxford: Berghahn.
Kernaghan, R. (2012). Furrows and walls, or the legal topography of a frontier road in Peru. *Mobilities, 7*(4), 501–520.
Kobi, M. (2016). *Constructing, creating and contesting cityscapes: A socio-anthropological approach to urban transformation in southern Xinjiang, people's Republic of China*. Wiesbaden: Harrassowitz Verlag.
Kremen, C. (2005). Managing ecosystem services: What do we need to know about their ecology? *Ecology Letters, 8*, 468–479.
Li, X. (2015). *Silk Road Initiatives to connect people's hearts*. *China Daily European Weekly* (on-line edition), 17 April 2015.
Li, Y., Chen, Y., Zhang, Y., & Xia, Y. (2009). Rehabilitating China's largest inland river. *Conservation Biology, 23*(3), 531–536.
Mostowlansky, T. (2017). *Azan on the moon: Entangling modernity along Tajikistan's pamir highway*. Pittsburgh, PA: University of Pittsburgh Press.
Murton, G. (2017). Bordering spaces, practising borders: Fences, roads and reorientations across a Nepal–China borderland. *South Asia: Journal of South Asian Studies, 40*(2), 239–255.
NDRC; National Development and Reform Commission, Ministry of Foreign Affairs, and Ministry of Commerce of the People's Republic of China (Ed.). (2015). *Vision and Actions on jointly building Silk road economic belt and 21st-century Maritime Silk road*. http://en.ndrc.gov.cn/newsrelease/201503/t20150330_669367.html.
Nielsen, M. (2012). Roadside inventions: Making time and money work at a road construction site in Mozambique. *Mobilities, 7*(4), 467–480.
Puig de la Bellacasa, M. (2017). *Matters of care: Speculative ethics in more than human worlds*. Minneapolis: University of Minnesota Press.
Reeves, M. (2014). *Border work: Spatial lives of the state in rural central Asia*. Ithaca: Cornell University Press.
Rezakhani, K. (2010). The road that never was: The Silk road and trans-eurasian exchange. *Comparative Studies of South Asia, Africa and the Middle East, 30*(3), 420–433.
Rippa, A. (2017). Centralising peripheries: The belt and road initiative and its role in the development of the Chinese borderlands. *International Journal of Business Anthropology, 7*(1), 1–21.
RZBW, Ruoqiangxian Zhi Banzuan Weiyuanhui (Ed.). (1992). *Ruoqiangxian zhi, Xinjiang weiwu'er zizhiqu difangzhi congshu*. Urumchi: Xinjiang Daxue Chubanshe.
Schwenkel, C. (2015). Spectacular infrastructure and its breakdown in socialist vietnam. *American Ethnologist, 42*(3), 520–534.
Selwyn, T. (2001). Landscapes of separation: Reflections on the symbolism of by-pass roads in Palestine. In B. Bender, & M. Winer (Eds.), *Contested landscapes: Movement, exile and place* (pp. 225–240). Oxford, New York: Berg.
Sidaway, J. D., & Chih, Yuan Woon (2017). Chinese narratives on "one belt, one road" (一带一路) in geopolitical and imperial contexts. *The Professional Geographer, 69*(4), 591–603.
Strebel, I., Bovet, A., & Philippe, S. (2019). *Repair work ethnographies: Revisiting breakdown, relocating materiality*. Palgrave Macmillan.
Thum, R. (2014). *The sacred routes of Uyghur history*. Cambridge, MA, and London: Harvard University Press.
Toops, S. (2013). Spatial results of the 2010 census of Xinjiang. In *Paper presented at the annual meeting of the association of asian studies, san diego*.
Tsing, A. (2005). *Friction: An ethnography of global connection*. Princeton and Oxford: Princeton University Press.
Uteng, T. P., & Cresswell, T. (Eds.). (2008). *Gendered mobilities*. Aldershot: Ashgate.
Woodworth, M. (2012). Frontier boomtown urbanism in ordos, inner Mongolia autonomous region. *CrossCurrents, 1*(1), 74–101.
Xinhua Agency. (2015). *Yidai yilu hexinqu mingque: Xinjiang cheng qianyan [The core areas of the BRI have been revealed: Xinjiang assumes the forward position]*. Retrieved from http://news.xinhuanet.com/world/2015-04/01/c_1114842365.htm.
XJSBW, Xinjiang Jiaotong Shizhi Bianzuan Weiyuanhui (Ed.). (1998). *Xinjiang gonglu shi, xiandai gonglu [the history of Xinjiang roads, contemporary roads], vol. 2 in the series*

zhongguo gonglu jiaotongshi congshu [the history of Chinese roads and transportation]. Beijing: Renmin Jiaotong Chubanshe.

XWZCZ, Xinjiang Weiwu'er Zizhiqu Chengli 50 Zhounian Chouweihui Bangongshi and Xinjiang Weiwu'er Zizhiqu Tongjiju (Ed.). (2005). *Xinjiang wushinian 1955–2005 [Xinjiang: Fifty years 1955–2005]*. Beijing: Zhongguo Tongji Chubanshe.

XWZDBW, Xinjiang Weiwu'er Zizhiqu Difangzhi Bianzuan Weiyuanhui and Xinjiang Tongzhi Jiaotong Zhi Bianzuan Weiyuanhui (Ed.). (1998). *Xinjiang tongzhi, di 48 juan, gonglu jiaotong zhi [Xinjiang annals, vol. 48, road and transportation annals]*. Urumchi: Xinjiang Renmin Chubanshe.

XWZJSBW, Xinjiang Weiwu'er Zizhiqu Jiaotong Shizhi Bianzuan Weiyuanhui (Ed.). (1992). *Xinjiang gonglu jiaotong shi, jindai gonglu, jindai gonglu yunshu [the history of Xinjiang's road transportation. Modern roads and modern road transport], vol. 1 in the series zhongguo gonglu jiaotongshi congshu [the history of Chinese roads and transportation]*. Beijing: Renmin Jiaotong Chubanshe.

YDBW, Yulixian Difangzhi Bianzuan Weiyuanhui (Ed.). (1993). *Yulixianzhi, Xinjiang weiwu'er zizhiqu difangzhi congshu*. Urumchi: Xinjiang Daxue Chubanshe.

Yu, H. (2017). Motivation behind China's 'one belt, one road' initiatives and establishment of the asian infrastructure investment bank. *Journal of Contemporary China, 26*(105), 353–368.

Zenz, A. (2018). 'Thoroughly reforming them towards a healthy heart attitude': China's political re-education campaign in Xinjiang. *Central Asian Survey*. https://doi.org/10.1080/02634937.2018.1507997.

Zenz, A., & Leibold, James (2017). Xinjiang's rapidly evolving security state. *China Brief, 17*(4). https://jamestown.org/program/xinjiangs-rapidly-evolving-security-state/.

Zhang, J., Wu, G., Wang, Q., & Li, X. (2010). Restoring environmental flows and improving riparian ecosystem of Tarim River. *Journal of Arid Land, 2*(1), 43–50.

Zhu, X. (2013). Shijie zui chang zhuanqi gonglu [The world's longest brick road]. *Renmin Gong'an*, (18–19), 76–79.